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OFFICE OF NAVAL INTELLIGENCE.
WAR NOTES NO. IV.
INFORMATION FROM ABROAD.

SKETCHES

FROM THE

SPANISH-AMERICAN WAR.

BY
COMMANDER J. . .
(CONCLUDED.)

TRANSLATED FROM THE GERMAN.



OFFICE OF NAVAL INTELLIGENCE.

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INTRODUCTORY.

Sketches from the naval battle of Santiago and occupation of Puerto Rico, by Commander Jacobsen, of the German protected cruiser *Geier*, given in this number of the War Notes, are a continuation of Sketches from the Spanish-American War, by the same officer, given in War Notes No. III.

RICHARDSON CLOVER,
Commander, U. S. N., Chief Intelligence Officer.

NAVY DEPARTMENT, *March 27, 1899.*

Approved:

A. S. CROWNINSHIELD, *Rear-Admiral, U. S. N.,*
Chief of Bureau of Navigation.



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SKETCHES FROM THE SPANISH-AMERICAN WAR.

By Commander J.

[Translated from the *Marine-Rundschau*, January and February, 1899—Concluded.]

VI. THE NAVAL BATTLE OF SANTIAGO.

1. I have no official sources at my disposal from which to give an account of the battle. The reports of Admiral Sampson and the commanders of the American ships, as well as the reports on the condition of the Spanish vessels after the battle and on the positions and movements of all ships during the battle were published in the *New York Herald*. From the Spanish side nothing has been published except a short report of Admiral Cervera to Captain-General Blanco and an article entitled "Admiral Cervera's fleet" published in the *Revista General de Marina*. Under these circumstances it is inevitable that errors and omissions will occur in the account of the battle; but, on the whole, it will probably give an approximately correct idea.

Paragraphs 2-13, inclusive, have not been translated as they were from United States publications containing:

(1) Descriptions of the United States and Spanish vessels engaged in the battle.

(2) Chart showing the positions of the ships during the battle at different times between 9.30 a. m. and 1.15 p. m. from the records of the United States Naval Board appointed to plot such positions.

(3) Description of the engagement compiled from official reports of the commanders of the United States vessels.

(4) Condition of Spanish vessels after the battle, as shown by the United States board appointed to examine them.

14. With Admiral Sampson's permission the officers of the *Geier* inspected the Spanish ships on August 12, more than a month after the battle, at which time the following observations were made:

(a) The ships, after coming out of the harbor entrance on a westerly course, turned to starboard and ran ashore in small coves, where they probably saw the best chance for their crews to reach the shore through the surf.

(b) The reason for beaching the ships can probably be found in the fact that the fires which broke out on board after the first American

hits could not be controlled by the crews, who had lost their heads under the hail of hostile projectiles. All three of the ships present pictures of the most frightful ruin, chiefly due to the explosions and the conflagrations, which did not reach their full intensity until after the ships had been run ashore. All the woodwork and combustible material had been burned. The following will give an idea of the intense heat that must have prevailed:

The iron deck beams and other horizontal iron parts were very much warped; the bearings of the connecting rods had been melted; the iron masts had been partly melted where they pass through the upper deck; the brass frames of the ports between decks had been partly melted, and the ports themselves were found on deck converted into large lumps of glass; parts of the rapid-fire mounts had been melted, the lead in the small caliber and machine-gun projectiles had melted and run out, and the casings had been reduced to ashes.

(e) Besides the conflagrations and subsequent explosions, the ships sustained such severe leaks when running ashore that it will be impossible to float them again, with the exception of the *Maria Teresa*, which is now being attempted to be hauled off.¹

All the masts of the ships had fallen aft and had been hurled to the deck with their tops. Only the mainmast of the *Maria Teresa* was left standing, which is an evidence that she ran ashore at less speed, which is further shown by the fact that she sustained less leaks than the other ships. The mainmast of the *Oquendo* had fallen to starboard and broken in two upon striking the railing and one part gone overboard.

(d) Nothing definite could be ascertained as to the boats that had been on board. There was nothing left but the wrecks of two iron steam launches hanging in the warped and partly broken davits on board of each of the ships.

(e) The engines were probably intact in all of the ships at the time they ran ashore, for they were apparently running at great speed—at least the *Oquendo* and the *Vizcaya*.

The machinery installation on board the ships was about as follows:

α. The two main engines and six main boilers are located in five water-tight compartments below the protective deck. Above them, between decks, and protected by lateral coal bunkers, are two large auxiliary boilers of at least 12 tons capacity, and many auxiliary engines, conspicuous among which is a large and powerful centrifugal bilge pump with a discharge pipe of about 300 mm. diameter. The protective deck, extending from the stem to the after torpedo room, is slightly vaulted forward of the boiler rooms, and pierced above the boiler and engine rooms for the passage of smokestack casings and engine skylight, but is protected at this place by a strong glacis, rising

¹ In the meantime the *Maria Teresa* has been floated by American wreckers, but she sank on her way to Norfolk.—ED. "RUNDSCHAU."

at an angle of about 30 degrees from the inner bunker walls. The openings in the engine skylight and smokestack casings were protected by iron gratings. The protection by lateral coal bunkers extended through boiler and engine rooms, reaching to the battery deck, a height of 3.5 meters. Alongside the engine rooms in each of the bunkers to port and starboard forward and starboard aft was a room for engine supplies, while to port aft was a well-equipped workshop, extending nearly to the ship's side. In the workshop was a small 1-cylinder steam engine for driving transmission gear, actuating a turning-lathe, a boring engine, a grindstone, and very strong shears, also five vises. The supply rooms appear to have been well equipped, but everything seems to have been stored in wooden closets and on wooden shelves, for all the tools were found scattered on the floor in wild confusion.

β. There was a surprising number of rough castings, especially of stuffing boxes. Spare parts for the main engines were found suspended in the engine skylight; covers, pistons, and slide-valve faces for low-pressure cylinders on the bulkheads. To the smokestack casings were secured three connecting rods, eccentric rods, etc.

γ. Nothing could be noticed of any provisions having been made for the protection of the machinery installations except the iron gratings. In the *Almirante Oquendo* coal sacks were found near the auxiliary boiler, but their object could not be determined, the boiler room being flooded. The steam pipes above the protective deck do not appear to have been disconnected before the battle. Valves leading to auxiliary engines, which were not used during the fight (such as ash-hoisting machinery, pumps for auxiliary boilers, etc.), were found open. The centrifugal bilge pump above mentioned also appeared to have been in gear. The bulkhead doors above the protective deck were all open. They could not have been opened subsequently, since all the bulkheads had been warped by the heat, but the bolts were intact.

(f) At the time of our inspection nothing could be ascertained regarding the injuries in the engine rooms, because they were all under water almost up to the protective deck. It was learned from an American engineer engaged in the wrecking operations of the *Infanta Maria Teresa* that no dead bodies had been found in the engine and boiler rooms, and hence it is probable that there have been no material injuries to the boilers and steam pipes. All the bunker bulkheads and connecting doors are said to have been open and all the fires of the boilers lighted.

(g) The damages above the protective deck had been caused chiefly by the conflagrations, but also by hits from the enemy's secondary battery. The inadequacy of the lateral protection of the engine rooms was striking. The supply rooms and workshops had been hit a number of times. Shots which entered the coal did not go through. Only one hit was noticed in the auxiliary piping above the protective deck of

the *Infanta Maria Teresa*. The shot had gone clear through the pipe without ripping it open, from which it may be inferred that there was no steam in it at the time.

(h) On the gun and upper decks the smokestack casings had been perforated in several places, also the smokestacks themselves. Apparently no measures had been taken for closing up these shot holes. The electric wiring had been struck in many places. Shot holes were also noticeable in the speaking tubes. It was not possible, owing to the complete destruction by fire, to make any further investigation of the means of communication and command.

(i) The three ships inspected had all their guns on board. The only ones that could not be found were the two 7-centimeter rapid-fire boat guns, but pivots had been provided on both sides of the stern, where these two guns were apparently intended to be installed for use against torpedo-boat attacks at night.

(k) From the slight losses which the American ships claim to have sustained, it may be judged that the training of the Spanish gun crews must have been very inadequate. This is not surprising, in view of the statement of one of the Spanish naval officers to the effect that no target practice is held in Spain in time of peace. Other circumstances also give evidence of very inefficient handling of the guns. The turrets and their guns, with the exception of the forward turret of the *Almirante Oquendo*, were found entirely intact. The loading apparatus for the 28-centimeter guns (Whitworth, Manchester, 1895) was of the hydraulic order, and the loading time was about two minutes. The 14-centimeter rapid-fire guns also were probably not used to their best advantage, owing to want of experience. There was evidently no lack of ammunition, for near some of the guns a number of cartridges were found, and some of the guns were still loaded, but had not been fired. To what circumstance it is due that the breechblocks of two of the guns were found lying in the rear of the guns with their pivot bolts torn off, could not be explained. Perhaps this may also be attributed to inefficient handling of the projectiles.

(l) Only the port side of the ships was fired upon. The starboard side shows but a few holes, where shots have passed out. Where the course of projectiles could be traced it was usually ranging from port aft to starboard forward. The destructive effect of the American projectiles is mainly due to the conflagrations caused by them. Aside from a shot through one of the turret roofs, no hits were observed in any of the armored turrets. Neither have any projectiles pierced the side armor, which shows no injuries. Only indentations are noticeable in places where projectiles have struck the armor. Projectiles of 15 centimeters and larger calibers that had hit the ship had in many instances gone out through the other side, making holes about 1 meter square, but without bursting. As the same observation has been made in the bombardments of Santiago and San Juan, it may be assumed

that it is due to the uncertain functioning of the base fuse. It is not probable that the Americans used armor-piercing shell, as fragments of projectiles of different sizes found in the vicinity show that explosive shell and not nonexplosive shell were used. Projectiles which had hit smokestacks and masts had gone clear through, making only small, round or oblong shot holes. Hits of small-caliber projectiles (5.7-centimeter) could be noticed in large numbers, and this was corroborated by the statement of an American officer to the effect that they were used in great quantities.

(m) The question whether the Spanish had any intention of making use of the torpedo weapon may probably be answered in the negative. The torpedo armaments of the ships, although including a large number of tubes, were so defective that there could hardly be any chance of success as against the powerful American ships. The armaments consisted of two bow, four broadside, and two stern tubes, all above water and of antiquated design, with large cartridges, band-brakes, etc., all located above the armored deck and entirely unprotected. In a very primitive manner the tubes had been partly protected by grate bars lashed with chains.

(n) The projectiles were 35-centimeter Schwartzkopff torpedoes with large depth-regulating apparatus.

No war-heads were to be found, with a single exception. According to the statement of an American petty officer, the war-heads had been left at Santiago, where they were to be used in connection with the mine obstructions. It is true that this does not agree with the fact that a torpedo head exploded on board the *Almirante Oquendo*. It is possible, however, that the ships retained one or two war-heads to be used in case of necessity as against rams, since the broadside tubes were adapted to be turned in any direction, or perhaps it was the commander's wish to take a war-head along.

(o) The following points support the assumption that it was not the intention to make use of the torpedo weapon:

α . Not one of the tubes still in existence was loaded, and all the tubes were closed. In the tubes destroyed by shots or otherwise no remnants of torpedoes were found.

β . The remaining torpedoes, almost without exception, were lying in their places along the ship's side. No torpedoes were found lying back of the tubes, with the exception of the bow tubes of the *Almirante Oquendo*.

γ . There was no pressure in any of the flasks. This is shown by the fact that the flasks were entirely uninjured, although the heat had partly melted the tailpieces of the torpedoes.

δ . In several of the torpedoes lying on top, the protecting cap for the depth-regulating apparatus had not been taken off, while it is necessary to remove it in order to put on the war heads.

ϵ . In a few of the torpedoes the sinking valves had been put in place,

but in most of them they were still found soldered, with connecting links raised.

ζ. The tubes for filling the launching cartridges were not connected, and only on the *Almirante Oquendo* was the powder charge in readiness.

A. INFANTA MARIA TERESA.

(p) This was the flagship, and the first one to be beached, about 6 miles from the entrance of Santiago. The ship's bow was lying only a little higher than usual above the waters line, the stern a little lower; otherwise upright. She evidently ran ashore at slow speed, for aside from the fact that there were only small leakages in the bottom, no boiler explosion took place, nor was the mainmast thrown down. In other respects also her injuries are much less than those of the other ships. The ammunition rooms appear to have been previously flooded, and therefore did not explode.

(q) This ship shows very few hits from the hostile guns, especially few of small caliber as compared with the others. While all the wood-work has been burned, the same as on the other ships, little damage has been sustained by the ship's hull. The ship has therefore been floated by the Americans.¹ All leaks had been stopped up, the ship pumped out, and then hauled off by steam tugs about 6 feet toward the sea. In this operation she sprang another leak aft and was again filled with water. On the day of our inspection this leak was being stopped up and the water pumped out by means of four steam pumps. Heavy articles, such as anchors, chains, etc., had been transferred to one of the wrecking steamers. While the ship was dry the two forward boilers had been set to work, and with them the auxiliary piping and several bilge pumps. One of the workmen stated that the engines had been found intact. The engine rooms could not be visited, because they were under water up to the tops of the cylinders. It could only be ascertained that the engine skylight had not been damaged.

(r) Three hits of large caliber—probably 20-centimeter—were observed:

α. A shell had entered the after torpedo room close above the water line, had passed through a heavy stanchion and a lateral bulk-head, and out through the starboard side, where it had torn a hole about 1 meter square. There were no indications to show that the projectile had burst. The shot hole on the starboard side was slightly forward of and about 1 meter higher than that on the port side.

β. Another projectile had passed through the whole length of the compartment above this torpedo room and out through the starboard side, likewise without exploding.

γ. A heavy shell must have exploded at the upper conning bridge, for the top of the conning tower, without having been perforated, showed large oblong scars, caused by heavy explosive fragments.

¹ She sank again on her way to the United States.—Ed. "RUNDSCHAU."

(s) A 15-centimeter shell had struck the port bow and loosened the reenforcement ring of the hawse hole. No injuries from explosive fragments were noticed here.

Another 15-centimeter shell had perforated the 3-centimeter shield of a 14-centimeter rapid-fire gun on the port side. Fragments had destroyed the shaft of the elevating gear and both hand wheels. Others had perforated the forward smokestack casing. This hit appears to have annihilated the whole crew of this gun, near which six charred bodies were found.

Another 15-centimeter shell had damaged the after smokestack, after passing through the empty part of a coal bunker, which was still filled with coal to within 1 meter of the ceiling.

(t) Very few small-caliber hits were noticed, only 6 in the ship's sides, 2 in the forward, and 5 in the after smokestack, though one of the latter may perhaps have been caused by a 15-centimeter projectile. Near the stern three indentations were noticeable in the side armor, probably caused by 5.7-centimeter projectiles which, striking at a very small angle, had glanced off.

(u) Further observations made are as follows:

All the breechblocks of the rapid-fire guns and parts of the mechanism of the revolving guns had been thrown overboard by the Spaniards. Whether the turret guns had also been rendered unserviceable could not be ascertained. In any event, they had not been injured by hostile projectiles nor by the conflagrations. The gun sights were also missing. Inside the armored turrets no damages of any kind were noticeable. Even the paint had hardly suffered from the heat. In the after-turret gun a projectile had been rammed home, but apparently the cartridge had not been entered. The conning tower was not injured, only burned on the inside.

(v) The torpedo-launching tubes and torpedoes had been less damaged by shots and fire than in the other ships. The complete remnants of twenty-four torpedoes were found, with the exception of the war heads. Only a few practice heads were found.

B. ALMIRANTE OQUENDO.

(w) This ship sustained very severe leaks when running aground. She lies over to port, with the bow about 1 meter light and the stern $1\frac{1}{2}$ meters deep. The ship appeared to have her back broken in the region of the foremast. The rapid-fire ammunition room just forward of the after turret had exploded. Amidships everything above this room had been hurled down. The protective deck was heaved up and wrenched from the sides. The deck beams throughout were badly warped, and both sides of the ship showed large holes, through which the water was washing in. The second explosion had taken place in the forward rapid-fire ammunition room. The effects were about the same as aft. On one side they were still further increased by the

explosion of a torpedo war head in the forward broadside torpedo room. Here the aperture in the ship's side had reached the dimensions of two meters in width and about 5 meters in length, its lower edge being formed by the armor.

(x) The *Almirante Oquendo* had suffered more than either of the other ships from hostile projectiles.

α A 15 to 20 centimeter shell had torn a piece about 20 centimeters wide and 50 centimeters long from the upper edge of the gun port in the top of the forward 28-centimeter turret and burst inside. A number of small holes, caused by shell fragments, covering a space of about 1 meter square, were noticeable in the top of the turret. There were no other traces of shell fragments. The bore was empty, the breech-block closed, and a shell was found in the rear of the gun in position for loading. Back of the gun and to the left of it two charred bodies were found, and to the right a mass of human remains that had apparently formed two more bodies. A head was found lying on the platform under the gun. Where the turret commander had been standing another charred body was found lying on its back, with the gun sights under it. The gun itself appeared to have sustained no injuries.

β . A shell, probably of 20-centimeter caliber, had passed through the ship's side in the engine workshop, where it had demolished the transmission shaft, the boring engine, and the turning lathe; then through the engine skylight and exploded on the other side of the latter, in the engine supply room.

γ . A heavy projectile had passed through the smokestack and out through the starboard side without having bursted in the ship.

δ . About 25 meters from the stern a heavy shell had struck the 'tween-decks and passed through it. On the starboard side inboard, several small holes were visible, apparantly from fragments of this shell.

ϵ . A shell, probably of 15-centimeter caliber, had hit the shield of the fourth 14-centimeter rapid-fire gun. The irregular holes noticeable in the forward smokestacks are probably attributable to fragments of this shell. The wheels of the revolving and elevating gear of this gun had also been damaged.

ζ . A 15-centimeter shell had passed through the port coal bunker and out through the starboard bunker.

η . A 14-centimeter rapid-fire gun on the starboard side had been hit on the left side by a 5.7-centimeter shell ranging forward. The projectile with solid point had passed entirely through the forward hoop and penetrated the bore to the depth of 2 centimeters. There were no splinters from the gun, but the displaced metal had been forced out at the edges, which is a proof of its great tenacity. The point of the projectile had been broken off and was lying near the gun. The hole is about 15 centimeters long and at the widest place 5 centimeters wide.

Θ . In the whole port side about forty small-caliber hits were counted,

most of them amidships. The smokestacks had also been hit several times by small projectiles.

1. Other observations made on board the *Almirante Oquendo* are as follows:

The armor had not been injured by any hits. In two of the rapid-fire guns the sights were found set for ranges of 13 and 14 kilometers, and in the 5.7-centimeter after-port gun at 10 kilometers. The sights of all the guns, with the exception of the revolving guns, had traveling eyepieces. None of the sights were found set for short ranges. Some of the 14-centimeter rapid-fire breechblocks were missing, while some of the guns were found completely loaded.

(y) The torpedo tube in which a torpedo had exploded had been torn into small fragments, the largest of which were a guiding bar and a hinged door. The torpedoes secured to the ship's side had also been destroyed, with the exception of the flasks, which had been hurled several meters from their positions. The bulkhead 'tween-decks near the place of the explosion showed traces of the same. Pieces about 4 centimeters square had passed entirely through it, while still smaller pieces had penetrated it to the depth of several millimeters. The conning tower had remained intact.

In the forward torpedo room torpedoes were found near each of the tubes, but without war heads on them. The port tube had the depth-regulating apparatus in readiness. The outer cap of one of the tubes was still open. The tubes had been bent by the grounding of the ship. They were not loaded.

C. VIZCAYA.

(z) The *Vizcaya*, like the *Almirante Oquendo*, is so seriously damaged that there is no prospect of hauling her off. This ship also ran ashore at great speed, and the keel was apparently broken in two, for with each sea the stern would rise and fall with loud creaking and groaning. The vessel was lying almost upright with only a small list to port. All the rooms below the protective deck, and the after rooms above it, were flooded.

Near the forward turret an explosion had taken place in the lower part of the ship, probably in one of the ammunition rooms. The wood part of the upper deck had been burned, and the iron plating torn open, and through the gap could be seen a chaos of broken anchor gear, capstans, chains, cement, rubbish, torpedo tubes, etc. The hull is about equally damaged on both sides.

α. The protective deck had been ripped open and the plating folded back on the starboard side, between the forward smokestack and the ship's side, probably as the result of a boiler explosion. The pivot sockets of the 14-centimeter rapid-fire guns had been torn away and the guns bent back to such an extent that the bores were pointing upward almost vertically.

β. Hot coal gas and smoke issuing from an open bunker hole showed that the coal was still burning.

γ. The *Vizcaya* has suffered little from hostile fire. A 15 to 20 centimeter shell had struck the forward broadside torpedo room, dismounted the port tube, and had apparently killed a number of men. Several charred bodies were found scattered over the whole room.

A 20-centimeter shell, ranging forward, had passed through the ship's side, through a locker amidships near the second 14-centimeter rapid-fire gun, and through a lateral bulkhead abaft of the forward turret; then, striking the turret, had glanced off without causing any impression, and exploded on the starboard side.

A heavy shell had entered the gun deck forward of the after turret and passed out through the starboard side without bursting in the ship.

Besides these three large-caliber hits, about twelve smaller ones could be noticed in the broadside, most of them of 4.7 and 5.7 centimeter caliber; also five hits in the forward and one in the after smokestack.

Other observations were made as follows:

The conning tower had not been damaged by projectiles, but completely burnt out on the inside. The conning bridge was totally demolished. Two charred bodies were found still lying in the tower, also several bodies or parts of bodies in different places on the iron gun deck. Many rapid-fire cartridges, either whole or in part, were found scattered about; also a quantity of exploded small-arm ammunition.

The breechblocks of two 14-centimeter rapid-fire guns were found near the guns. In one of these guns the projectile had been jammed near the muzzle. The whole cartridge was found in one of the bores. The breech was open.

δ. The torpedoes had not been made ready for use and the tubes were not loaded.

15. If we compare the observations made by the officers of the *Geier* as to the number of hits with the results of the examination made immediately after the battle, we obtain the following figures:

Hits from—	Maria Teresa.	Oquendo.	Vizcaya.	Colon.
10-cm. projectile	1	5	2	.....
12.7-cm. projectile	5 IV	5 III	6	4
20-cm. projectile	3	3 IV	4 III	.....
30.5 } cm. projectile	2	.....	.....	.....
33 } .....	.....	.....	.....	.....
Secondary battery	20 XV	42 XL	11 XVIII	.....

In the above table the Arabic figures designate the results of the United States Board, while the Roman figures represent the observations made at the time of our inspection in August last. It will be

noticed that there is not much discrepancey in the figures. Of course, observations made so long after the action can not lay claim to absolute accuracy, especially as our sojourn on board was necessarily short. The traces of many hits have been partly obliterated by the powerful action of the surf, especially in the superstructures, of which hardly anything is left standing. It may therefore be inferred that the figures of the United States Board are more nearly correct than ours; but even they probably fall short of the actual results.

16. The *Brooklyn* was hit about twenty times by shells and several times by fragments and machine gun projectiles. The cruiser sustained no serious injuries of any kind. The *Iowa* is said to have been hit twice in the bow, just above the water-line, by 15-centimeter shells and seven times by small-caliber projectiles. The *Texas* and *Indiana* were hit twice by light projectiles without sustaining serious injuries.

17. In order to be able to realize the complete defeat of the Spanish fleet it is necessary to call clearly to mind its situation in Santiago Harbor. Cervera had entered the harbor on May 19. As early as May 27 five hostile cruisers with several gunboats and auxiliary cruisers were observed in front of the harbor, and there was no longer any doubt that the whole American battle fleet was blockading the harbor. Then followed the bombardments of Morro Castle and the Socapa, several shells falling into the bay, and the Spanish ships retreated closer to the city. On June 3 the *Merrimac* was sunk, but the entrance remained unobstructed. On June 22 occurred the landing of the American troops, who on July 1 attacked the fortifications of the city. Five hundred men of the landing corps of the Spanish ships took part in the defense and are said to have fought very valiantly.

18. The Government authorities at Havana were very anxious to have the fleet leave the harbor, in order to remove the main object of the attack upon Santiago; for the ships had been the cause of the blockade and of the attack on the unprepared city. Hence it was imperative that the ships should leave. It is probable that ever since the middle of June this had been suggested to Admiral Cervera by the authorities at Havana; but the Admiral appears to have declared that it was impossible to make an attempt to run the blockade at night. Whether direct orders were finally given to leave the harbor under all circumstances I have not been able to ascertain.

19. Admiral Cervera was in a very difficult position. He was expected to act in some manner. He did not dare make the attempt at night, and so he decided to go out with his fleet in broad daylight. The whole crew fell a victim to this fatal decision. Instructions for the order of the sortie and the taking of the western course had been previously issued by the chief of the fleet. According to the *Revista General de Marina*, Vol. XI, No. 3, August, 1898, the Admiral was entirely convinced of the impossibility of defeating the enemy or of reaching another Cuban harbor, even if he should succeed in steaming right

through the hostile fleet. It is to this feeling of helplessness and impotence as against the American naval forces more than to anything else that I attribute the defeat. The Spanish ships had spent a month and a half in the harbor without even attempting to attack the blockading fleet when a favorable opportunity presented itself, or even of harassing it. The two torpedo-boat destroyers were not used for the purpose for which they were intended. This inactivity and lack of initiative must have had a very demoralizing effect on the officers and men. If we add to this the certain knowledge that the opposing forces were much stronger, it will be readily understood that the idea of general flight after coming out of the harbor entrance was the only acceptable one, especially in view of the possibility of beaching the ships, thereby rendering them unserviceable, and eventually rescuing the crews. From the very moment that this feeling of impotence took possession of the Spanish and led to the above reflections their fate, psychologically speaking, was sealed. We do not mean to disparage their valor and tenacity in the midst of the hostile fire; but, on the other hand, it is quite natural that the Admiral, seeing that everything was happening as he had foreseen, was the one who set the example of running his ship ashore. All the other commanders followed this example.

20. On the American side the situation was just the reverse. Admiral Sampson's fleet was fully conscious of its power. The blockade was being conducted in accordance with carefully prepared plans, as were also the arrangements in case of the enemy's attempt to escape. Frequent engagements with the Spanish forts had given commanders and crews that calm and assurance in the handling of their weapons which guarantees success. The long blockade service, exhausting and monotonous, hardly interrupted by any action on the part of the Spanish, had strung the nerves to the highest pitch, and everybody was anxious for the end to come. Suddenly the enemy attempts to escape. All the passions that had been smoldering under the ashes break forth. The welcome opportunity for settling accounts with the enemy had come at last, and with a wild rush the American ships fell upon their victims. At the beginning the American fire, owing to the excitement of the personnel and the great distances, was probably not very effective; but when the Spanish admiral turned to westward and the other ships followed him the moral superiority of the Americans reasserted itself. The commanders, calm and cool-headed, had their ships follow the same course, and the Americans, having every advantage on their side, recommenced the fire on the fleeing ships, which soon resulted in their total annihilation.

21. I have already spoken of the lack of training of the Spanish crews, the neglect of gun and torpedo target practice, the inadequate education of the commanders of the ships and torpedo-boat destroyers. It is mainly due to these deficiencies that the defeat was hastened and that the American ships sustained so few losses. Furthermore, there can be no excuse for having allowed the cruiser *Cristobal Colon* to

leave Spain without her heavy armament. It has also been stated that the rapid-fire guns of this cruiser were unserviceable, so that she was really completely defenseless. The training of the engine personnel also was totally unreliable, which is not surprising in view of the fact that the Spanish ships, as a rule, are not sent out on extensive cruises. The bottoms of the Spanish ships had not been cleaned for a long time, and as they had been lying in Santiago Harbor for a month and a half they were considerably fouled. Thus the cruisers *Maria Teresa*, *Oquendo*, and *Vizcaya*, which in all official books are credited with 18.5 knots speed, went into the battle with a speed of from 10 to 12 knots at most, and the *Cristobal Colon*, which is the latest ship and was to run 20 knots, hardly attained a speed of 13.5. Under these circumstances, in every way unfavorable for the Spanish, whose crews were insufficiently trained and physically and morally enervated by long inactivity, whose ships were inferior in number, speed, and fighting efficiency, it is no wonder that the victory of the Americans was easy and paid for with insignificant sacrifices.

22. There was only one chance for the success of the sortie. It should have been made at night in scattered formation. After a personal investigation of the locality, it is my opinion that it is entirely practicable for a fleet to leave Santiago Harbor at night. The wreck of the *Merrimac* did not constitute an obstruction. It is true that Admiral Sampson's report on the night blockade states that the light-ships were lying from 1 to 2 miles from Morro Castle, according to the state of the atmosphere, and that they lighted up the channel for half a mile inside. Even the best search light, however, does not reach farther than 1 mile. Therefore the illumination could not have been very effective. Moreover, the shore batteries, by opening fire upon the light-ships, could have compelled them to change their positions; but, strange to say, this was never done. The dark nights at the time of the new moon about the middle of June would have been best suited for the enterprise. Besides the four vessels of the fleet, two large Spanish merchant vessels lying in Santiago Harbor might have been taken out in order to deceive the enemy. The six vessels, with lights darkened, should have followed each other out of the harbor entrance, in predetermined order, as fast as possible. They should then have steered different courses, previously determined, with orders not to fight except when compelled to do so by the immediate vicinity of a hostile ship or when there was no possibility of escaping the enemy in the darkness. A rendezvous should have been fixed for the next day, where the ships that succeeded in escaping were to assemble.

23. If the fleet did not dare attempt a night sortie and was nevertheless compelled to leave the harbor in obedience to orders, then the ships should have been headed straight at the enemy. All weapons, including the torpedo and the ram, should have been used. A bold attack in close formation was the only chance of success against the

superior hostile fighting forces, who would hardly have found time to form their lines.

24. I shall not attempt to discuss at length all the lessons which may be derived from the battle, because this would lead too far. I will only enumerate them, and confine myself to dwelling a little more fully on those which are of the greatest importance for practical service.

- (a) Abolition of all woodwork.
- (b) No unprotected torpedo tubes.
- (c) Protection for all gun crews against shell fire.
- (d) Protection of the fire-extinguishing apparatus against shell fire.
- (e) Smokeless powder; greatest possible simplicity in the service of the guns and greatest possible rapidity of fire.
- (f) Good speed of the ships under normal conditions.
- (g) Thorough training of the crews in all branches of the service.

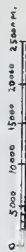
25. The last two are the most important. A ship may show very brilliant results at the trial trip and be credited with the greatest speed in the different books on the navies of all nations; but for the officer who is to command the ship in battle this is not a criterion from which to judge of her efficiency. Frequent trial trips under full steam, making it possible to discover and cure defects of the machinery in time of peace, and familiarizing the personnel with the functioning of the vessel in all its details, can alone give the commander an idea of what he may expect of his ship in battle. Extensive cruises at war speed should also be made, in order that the personnel may get an idea of how much more will be required in time of war. This is especially important in the tropics, where the great heat materially affects the physical endurance and efficiency of the boiler and engine personnel.

26. The most perfect training of the crews in all branches of the service, especially by all kinds of torpedo and gun practice, as nearly as possible under war conditions, is the foundation of success. As I said in Part IV of this work, nothing should be left undone to attain the greatest perfection possible in time of peace. No expense should be spared to enable those who bear the responsibility of the battle—the chiefs of fleets and squadrons, as well as all commanders—thoroughly to test the actual degree of efficiency of their crews by practical exercises, resembling as nearly as possible the operations of actual warfare.

27. Such exercises will also demonstrate whether the weapons, from a technical standpoint, are equal to all the exigencies of war. I learned, for instance, that the following defects were found to exist in the American artillery matériel:

(a) *Brooklyn*.—In the 5.7-centimeter rapid-fire guns cartridges were jammed in several instances. In the 20-centimeter guns the plugs stuck several times. Some of the 12.7-centimeter rapid-fire guns became unserviceable toward the end of the battle because the elevating gear did not function properly, and all these guns had to be supplied with new mounts after the battle.

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(b) *Texas*.—The two 30.5 centimeter guns had been fired several times across the deck, considerably damaging the latter. A suggestion made in time of peace that the guns be tested in that respect had not been followed out.

(c) *Iowa*.—On this ship, also, the deck had been damaged by the firing of the heavy guns. The training gear of the 20-centimeter guns had not been able to sustain the firing at great elevation.

The most careful examination of the artillery matériel in time of peace is absolutely necessary. Even when the strictest requirements are made and fulfilled in testing the guns, it is no guarantee that the matériel will not in the course of time show defects on board ship. In order that such defects may not remain hidden, to become apparent only when the guns are used in actual war, at least part of the target practice should be held with full service charges.

VII. THE OCCUPATION OF PUERTO RICO.

1. In my first visit to San Juan de Puerto Rico (see Part III of the Sketches), I found there, to my great astonishment, a comparatively large German colony. I learned that in all the principal towns on the island, such as Ponce, Mayaguez, Aguadilla, and Arecibo, Germans are likewise settled, and in the possession of large business houses, enjoy the esteem of the Spaniards as well as of the Puerto Ricans. Under these circumstances it appeared necessary to send thither a war ship for the protection of the Germans when the Government of the United States commenced action against Puerto Rico. I have successively visited the harbors of Mayaguez, Ponce, and San Juan. The first two were already occupied by the Americans, while the third city was still in the hands of the Spaniards. On the 13th of August it became known that peace negotiations had commenced, and hostilities ceased.

No great battles were fought in this campaign; only a few minor skirmishes took place. But the American troops were marched up in such a simple and skillful manner that the operations are not without interest. Moreover, our readers will be glad to learn some particulars about this beautiful island, in which these many years German merchants, mostly from Hamburg and Bremen, have exerted their best energy in steady, unremitting toil, and which now, as the price of victory, falls into the lap of the United States.

2. The accompanying map of the island is the latest and best published. It shows the different departments, so that a description is not necessary. All the turnpikes and roads which are to be considered in connection with the advance of the American troops, as well as the railroad skirting the coast, are also indicated on the map. The mountain range which extends nearly parallel to the southern coast from Adjuntas to Cayey is, on an average, not over 1,000 meters high, and from both towns is continued in several spurs to the eastward and westward. This range constitutes a weather barrier, as the fresh northeast trades cool the northern part of the island and provide

abundant rains, while in the southern part of the island the mountains prevent this moderation, and the heat often becomes unbearable. Numerous streams water the fertile soil, which in former years produced mainly sugar, but now also coffee, tobacco, and bananas, and furnish large areas of magnificent pastures. The number of inhabitants in round numbers is 800,000. The area of Puerto Rico is about one-tenth that of Cuba, which has hardly 1,500,000 inhabitants. The whole island of Puerto Rico is inhabited. There are no extensive uncultivated stretches, as in Cuba. Still, much remains to be done to obtain better yields than heretofore from the rich and fertile soil. In the first place, the agricultural methods should be improved, better communication established with the coast, and, finally, the mineral treasures of the island exploited. In this latter direction hardly anything has been done. As far as the social conditions of the island are concerned, it has been spared the serious disorders that have been raging in Cuba during the last few decades. The Spanish, by means of military posts distributed all over the island, and especially the Guardia Civil, an excellent police system, have succeeded in maintaining order and safety throughout the country. There have been minor disturbances, it is true; but at no time has there been an actual rebellion against the Spanish Government, such as was spoken of at the beginning of the Spanish-American war. Nevertheless, there has gradually developed among the Puerto Ricans an intense hatred toward the selfish Spanish administration, and with open arms they received the Americans who came as liberators from the Spanish yoke.

3. The general opinion, reinforced by the United States press, was that the troops would land east of San Juan, probably at Tajardo. General Miles was the only one who was informed as to the landing place selected, and he left Guantanamo on July 21, with the auxiliary cruiser *Yale* and seven transports with about 3,500 men. The battleship *Massachusetts*, the cruiser *Columbia*, and six small gunboats and auxiliary cruisers, among them the *Dixie*, *Annapolis*, and *Gloucester*, accompanied the transport fleet. Upon reaching Mona Passage the fleet headed for the southern coast of Puerto Rico, and on July 25, the troops were landed at Guanica without encountering serious resistance. The very next day, after a short fight with the Spanish, Yauco, which controls the railway to Ponce, was occupied.

On July 27, the *Dixie*, *Annapolis*, and several other vessels appeared in front of Ponce and demanded the surrender of the city. The United States general granted time until the next morning, and told the commander of the city that unless the surrender had taken place by that time he should at once proceed to bombard the city, and land his men. Captain-General Macias, at San Juan, had given the commander strict orders to defend the city to the utmost, but the combined efforts of the foreign consuls prevailed upon Colonel San Martin to agree to the surrender of the city on condition that the Spanish troops would not be pursued for forty-eight hours. This agreement, however, of which the

United States commander had already been notified, was declared null and void by Captain-General Macias, who at the same time discharged Colonel San Martin from office, and it was only due to the energetic efforts of the German and British consuls that the captain-general became convinced of the necessity of surrendering, and finally consented to the evacuation of the city. Thus the Americans took possession of Ponce at 6 a. m. on July 28, without loss of life or injury to property, and on July 29, they landed a large division of troops, consisting of from 5,000 to 6,000 men, with artillery and wagons. On August 1, two vessels occupied Arroyo, where about 3,000 men were landed.

4. Thus the Americans in a short space of time had gained possession of the three principal harbors on the southern coast of Puerto Rico without firing a single shot. They owe this first of all to the friendly disposition of the population and the lack of energy of the Spanish officers, who did not dare offer any resistance. General Miles's subsequent plan of campaign is self-evident. The troops landed at Arroyo were to advance upon Guayama, thence to Cayey, which lies on the main road to San Juan. The fighting forces at Ponce were also to advance upon Cayey by way of Juana Diaz, Coamo, and Aibonito. The troops at Guanica were to advance by way of Yauco, San German, and Hormigueros, and occupy first Mayaguez, then Aguadilla and Arecibo. A glance at the map will show that this plan would compel the Spanish forces, in order not to be cut off, to retreat to San Juan. When all the United States forces had been concentrated at San Juan, they were to surround the city, supported by the blockading fleet, and it was here that the decisive blow was to fall.

5. General Miles's plan of campaign was carried out as intended. On August 8 General Schwan advanced from Yauco upon San German. At Hormigueros they were opposed by the Spanish, who with 1,000 men occupied an excellent position; but as soon as the American artillery was lined up and the American lines advanced the Spanish evacuated the heights and retreated. On August 11 General Schwan took possession of the town of Mayaguez, which had been evacuated by the Spanish, and met with a hearty reception from the inhabitants. The American troops pursued the Spanish and succeeded in surprising them on August 12 at Las Marias. The Spanish troops were resting, without any special measures of precaution, on the bank of the Guasio River, when the Americans were discerned on the heights. As the river was very high from recent heavy rains, the Spanish had difficulty in crossing it. The American commander demanded their surrender; but it seems that the Spanish had opened fire, thereby compelling the Americans to answer with their artillery. This caused great confusion in the Spanish lines. Two companies only succeeded in crossing the river, the others had to surrender. The Spanish had 40 killed and wounded. Among the many prisoners who were taken to Mayaguez were several colonels and captains.

On August 4 the main body of the troops advanced on the excellent road from Juana Diaz, a small town about 25 kilometers from Ponce. On August 9 they took Coamo, which the Spanish were holding with a force of about 1,000 men. The fight lasted five hours, and ended in the evacuation by the Spanish, as the Americans had succeeded in going around the enemy's flank. The Spanish had 15 killed, among them the commander in chief and several officers. About 150 were taken prisoners. The Americans had 7 wounded. The Spanish retreated to Aibonito, where they intrenched themselves in a fortified position. They were not effectively attacked here, because hostilities were suspended about that time.

The third division of the American troops had advanced from Arroyo and taken Guayama on August 5. On August 8, while advancing toward Cayey, the Americans had a slight engagement with the enemy intrenched in a fortified position, ending in the retreat of the latter. But the American troops had to return to Guayama, because they did not consider themselves strong enough to accomplish the task set them--viz, to advance as far as Cayey. When, on August 12, the Americans started a second time, they found the Spanish in the same fortified position. No fight took place, because the news arrived that peace negotiations had been entered into.

6. According to the census of January 1, 1898, the Spanish had the following troops in the different departments:

ARMY.

	Generals.	Com- manders.	Officers.	Men.	Total.
San Juan.....	2	39	136	2, 217	2, 394
Arecibo.....		1	15	253	269
Aguadilla.....		2	13	313	328
Mayaguez.....		3	51	1, 101	1, 155
Ponce.....		5	51	1, 317	1, 373
Guayama.....		4	44	997	1, 045
Numacao.....		1	16	320	337
Vieques.....		1	4	96	101
Total.....	2	56	330	6, 614	7, 002

NAVY.

	Admirals.	Com- manders.	Officers.	Sailors, mechanics, and fire- men.	Marine infantry.	Total.
San Juan.....	1	9	20	287	22	339
Arecibo.....			1	3		4
Aguadilla.....			1	2		3
Mayaguez.....		1		4		5
Ponce.....		1		5		6
Guayama.....			1	2		3
Numacao.....			2	4		6
Vieques.....			1	1		2
Total.....	1	11	26	308	22	368

The volunteers have not been included, because, with very few exceptions, they laid down their arms as soon as the Americans landed in Puerto Rico.

7. In Puerto Rico, as well as in Cuba, no plans had been made for concentrating the troops at the beginning of the war. The fighting forces were so small that landings of the enemy at any point on the coast could not be impeded. The troops, by remaining in their different departments, might find themselves under the necessity of having to fight far superior hostile forces, and finally to retreat within sight of the enemy in order not to be cut off. The best plan would have been to concentrate all the troops in a fortified position near Cayey, keeping up retrograde communication with San Juan. If the enemy had landed east or west of San Juan, it would have been easy, in view of the good road, to effect a change of front or for the whole force to retreat to San Juan, which was the most important point of the Spanish. If that city had been defended by 7,000 men, it could have resisted the enemy for a long time. It is true, however, that without the prospect of assistance from the Navy, the final surrender of the city, as the result either of the harbor being forced by the enemy or of starvation, would have been only a question of time.

8. At the time of our arrival at Mayaguez hostilities had just been suspended. General Schwan had taken charge of the administration of the department. The inhabitants were entirely satisfied with the new order of things, but many families were mourning the fatal defeat of the Spanish troops at Las Marias. The prisoners taken by the Americans had been quartered in the barracks and were being strictly guarded. We had to abandon our attempt to inspect the scene of the battle because the road, owing to recent rains, was in very bad condition and obstructed by the numerous baggage carts of the American troops. But in order to gain at least an idea of the immediate surroundings of Mayaguez, I drove to Hormigueros, where the first engagement had taken place between American and Spanish troops. A well-kept road follows the coast over almost level ground, passing through several small hamlets. Soon the scenery changes. Cane fields resplendent in their fresh verdure are seen in every direction, and beautiful hills closely covered with banana palms and coffee trees appear before our eyes and gradually rise higher and higher.

In the distance the river may be seen, crossed by a number of iron bridges, over which the railroad passes that runs along the river. The road rises very gradually, and after we had passed over the top of the range of hills we saw at our feet the pretty town of Hormigueros. At its highest point stands the church from which one must gain a magnificent view over the whole region. We went there, and after mounting the stone steps into the belfry, we saw before our eyes a panorama of indescribable loveliness. Indeed, a better point could hardly be found from which to gain an idea of the exquisite beauty of Puerto

Rico. Far as the eye can see stretch the picturesque ranges of hills clad in the loveliest green; at their feet a few scattered cottages and small hamlets, and glistening streams winding their way through them. But we could not allow our eyes to be completely captivated by the natural charms of the country. We had also to satisfy our military curiosity. One thing became evident at a glance, namely, that the church was the best tactical point of the whole region, as all the different positions could be observed from there. The Spanish commander in chief appears to have realized this circumstance; for, as the kindly priest of the church told us, it had been his intention to occupy the church and line up his artillery on the adjoining hill; but the priest had succeeded in dissuading the commander from this plan, which would surely have entailed the destruction of the church and town. Probably no serious resistance had been planned by the Spanish, and they were therefore only occupying the range of hills between which a defile leads to the town of Mayaguez, to which the troops retreated as soon as the Americans commenced to advance after the first few volleys. In the little town of Hormigueros peace and quiet were reigning. The Americans had already appointed a mayor. A few families from Mayaguez had come hither to await further developments. On my return to Mayaguez I had an opportunity of inspecting a company of United States volunteers. They were nearly all tall, robust men, most of them with healthy complexions and of good military bearing. All the volunteers were equipped with Krag-Jørgensen rifles.

9. On August 16 we left the harbor of Mayaguez and steamed to Ponce, where we arrived in the evening of the same day. The harbor was crowded with American war ships, auxiliary cruisers, and transports; but as a result of the peace negotiations, many of the war ships had received orders to return to Guantanamo or to proceed to the United States, so that the harbor was considerably cleared during the next few days. General Gilmore, in the absence of General Miles, who was then at Coamo, had established the headquarters of his staff at the custom-house. The United States garrison was encamped near the harbor on both sides of the main road leading to Ponce. The camp consisted of ordinary tents, with camp beds raised a few feet above the ground. As it always rained several hours during the day and usually all night long, one may easily imagine the condition of this camp. Men were constantly at work digging new drains for the water. At times the guards and patrols surrounding the camp had to wade in the mud up to their knees. It is a wonder that there was not more sickness in the camp, for the American general told me there were only a few cases of malarial fever. But exposure to the burning rays of the sun, to constant rains, and the exhalations of the soil is extremely dangerous in this climate, as the residents know only too well, and can not fail but have its injurious effects sooner or later. As a matter of fact, many cases of fever have subsequently developed among the

American troops. I can not understand why the military authorities had not exercised greater care. Would it not have been better to send the troops to Coamo, which is located on much higher ground, leaving only a small garrison at Ponce? Such a garrison would have been quite sufficient for the protection of the latter town, and might have been quartered in public buildings, such as the church, the theater, etc. The United States transport steamers are said to have had on board all the material necessary for the construction of a small shipyard. If it is true that they carried their preparation to that extent, then better provisions should also have been made for taking care of human lives. If it was not deemed advisable to quarter the men in the towns, then corrugated-tin barracks should have been taken along, which can be taken apart and speedily erected on piles driven into the ground. Ordinary tents were certainly inadequate.

10. On one of the following days we made an excursion to the vicinity of Coamo, about 30 kilometers from Ponce. The beautiful wide road extending all the way to San Juan is a true work of art, and makes it possible to advance rapidly. The whole distance from Ponce to San Juan, about 135 kilometers, can be made in vehicles, by changing the horses twice, in fourteen to sixteen hours. The rise is very gradual. On both sides are small huts of natives with corrugated tin roofs, or covered simply with palm leaves and built on piles about 1 meter high. Soon we came out upon the open country, where wooded hills and valleys alternated with coffee plantations and banana and sugar-cane fields. The profuse tropical vegetation, especially the slender palms with their magnificent crowns, is a constant delight to the eye. After the rain, which had been falling all through the preceding night, the foliage was particularly green and fresh and the shady road nearly free from dust. In several places the road is crossed by the river, which can usually be forded. Where it is too rapid bridges have been built. Upon reaching Juano Diaz the landscape becomes even more beautiful. The heights afford a splendid view of the whole region from the coast to the high mountain range. At Coamo we left the main road and soon reached a beautiful valley made famous by the "Baños de Coamo." There is a large hotel for the accommodation of visitors. The bathing establishment also is very conveniently arranged. A natural spring furnishes sulphur baths. The only thing that reminded us of war during our trip were a few squads of American cavalry and long trains of wagons, each drawn by six mules, which were taking the necessary supplies to the troops encamped at Aibonito. From what we could learn, it seems that the American authorities were preserving excellent order and safety at Ponce and vicinity, but the Puerto Rican inhabitants showed their hatred for the Spanish so openly that in spite of the strict measures taken by the Americans there is danger of demonstrations by the inhabitants in that direction.

11. On August 23 we made a second visit to San Juan. The mines

in the entrance had been removed and the channel was marked by buoys in the usual manner. Besides the Spanish gunboats *Isabel II*, *General Conche*, *Creola*, and *Ponce de Leon*, and the torpedo-boat destroyer *Terror*, there were neither war nor merchant vessels in the harbor. The city itself presented the same aspect as before the blockade. It was not until the latter part of August that steamers arrived and commerce and traffic were reestablished. I took advantage of our presence there to learn further particulars about the engagement between the torpedo-boat destroyer *Terror* and the United States auxiliary cruiser *St. Paul*. The commander of the *Terror* gave me the following account of the battle:

At 9 a. m. on June 22 the lookout at the fort signaled a suspicious vessel. The commander gave orders for the *Isabel II* to go out to reconnoiter and for the *Terror* to be ready for action. By 11.30 the vessel had come closer and the *Isabel II* went out. Upon sighting her, the hostile cruiser immediately hoisted her flag and waited. The *Isabel II* opened fire on the foe. The destroyer then received orders to go out and assist the *Isabel*. The *Terror*, which had been left by her fleet at Martinique, had not been able to recover her guns and ammunition, which during the voyage had been transferred to the *Maria Teresa* in order to make room for coal. The *Terror* therefore had no other weapons than her torpedoes and two 57-millimeter guns with little ammunition. The *Isabel* fought the *St. Paul* at a distance of from 10,000 to 12,000 meters. As the utmost range of our guns was only 4,000 meters, we could not assist the *Isabel* by going closer to her. I therefore gave orders to head the *Terror* east, so as not to interfere with the *Isabel* firing north on the enemy. When we were sufficiently clear of her and had the open sea before us, I headed straight for the *St. Paul* at a speed of from 20 to 21 knots.

The enemy, who hitherto had been firing on the *Isabel*, now directed upon us the well-aimed rapid fire of both her batteries, the lower one of which appeared to have eight, the upper one ten to twelve guns. At 4,000 meters we opened fire with our guns, in order to keep up the spirit of the crew during the long interval between the beginning of the hail of projectiles and the launching of the torpedo. Our fire was very accurate. At the first shot we saw the shell explode on the stern. Several other shots also hit their target, and our men were wild with joy. We had approached to within 1,200 meters and were about to launch the torpedo when the *Terror* commenced to veer to starboard. I had the helm shifted to port, but the ship kept on turning. Then I ordered the port engine stopped, and still the ship continued to turn to starboard. I then learned that a shell had exploded on deck and destroyed the leads to the steering gear and telegraph, so that the vessel followed the movements of the screw and was unmanageable. The hand-steering gear was at once put in operation; but as we passed the enemy at such close range, several projectiles hit us, one of them passing through the port side into the engine room, where it burst. The engine room became flooded and the engine appeared to have been disabled. We just managed to steam into the harbor.

From an inspection of the *Terror* it appeared that the fatal shell, ranging obliquely downward, had passed through the ship's side, torn off a steam gauge, killed three men, and struck the lower edge of the main steam pipe, tearing off its covering. This had deflected the shell, and it had passed out through the starboard side. It was through the hole made by the projectile in passing out that the engine room had been flooded up to the lower edge of the steam cylinder; but the engines continued to run, so that the *Terror*, though with gradually

slackened speed, was able to reach the harbor under her own steam. The shortest distance between the *Terror* and the *St. Paul* had been 800 meters. The gunboat *Isabel II*, I was told by her commander, had not gone closer than within 6,000 meters of the enemy.

12. We then visited the fortification works and made the following observations, which may be considered as a supplement to the description of the bombardments contained in Part III of these Sketches:

(a) *Morro Castle*.—On the highest terrace are three 15-centimeter Ordoñez guns of 30 calibers length and two 24-centimeter breech-loading howitzers of modern type; direction of fire northwest to west. On the next lower terrace are two 15-centimeter Ordoñez guns. These are all the guns that had been mounted. No guns were dismounted during the bombardments. The walls of the fort are over 6 meters thick and extremely solid. They show many hits of heavy, medium, and light artillery. The heavy projectiles had entered the walls to the depth of 2 meters and torn large pieces out of the masonry work. The smaller projectiles had done very little damage, which had already been repaired. One shell had struck the corner of the wall on the lower terrace and killed two of the men serving the guns and wounded several others by shell fragments and débris.

(b) *Cristobal Castle*.—Two 15-centimeter Ordoñez guns of 30 calibers length, trained north, fired about eighty rounds during the bombardment. A little to the rear are three 24-centimeter breech-loading howitzers of modern type. At one of these an enfilading shot passing over Morro Castle had struck the breech and killed one man. As a result of this accidental hit, and to protect the men serving the farther guns against shell fire and débris, earth traverses had been thrown up between the guns after the battle. A little further back and to the east three 15-centimeter guns, with an arc of fire north by way of east to southwest, and hence also adapted to fire on the land, were mounted on central-pivot carriages. These took part in the fight with about thirty rounds. Finally, at the Princesa Battery, adjoining Cristobal Castle on the east, there are four more 15-centimeter guns and two 24-centimeter howitzers. Cristobal Castle and the Princesa Battery sustained only a few hits, slightly damaging the outer walls.

(c) The howitzer and gun batteries of the harbor entrance show no serious injuries. Morro Castle appears to have been the main object of the American fire. The fact that many shells did not explode has been much commented upon.

(d) Besides the fortifications mentioned above, the Spanish had erected a new battery at Escambron, with three 24-centimeter howitzers of modern type in central-pivot mounts, for indirect fire. For land defense a series of earthworks had been erected near San Antonio and armed with mortars and bronze guns.

13. As we left Morro Castle Spanish soldiers were engaged in taking down the shield with the Spanish coat of arms over the main

entrance. As the remains of the ever-glorious Columbus had been removed from the cathedral at Havana, where they had a beautiful and well-cared-for resting place, so it was also desired to carry to Spain this escutcheon which for centuries had been the witness of the victories and greatness of the Spanish nation. When both of these—the remains of the man to whom the whole world owes so much and the emblem of Spanish power—reach Spain there will be profound sadness throughout the whole country over the final loss of its colonies. The history of this short struggle is another example of the instability of power and fame in the ever-changing destinies of the nations of the earth!



OFFICE OF NAVAL INTELLIGENCE.
WAR NOTES No. V.
INFORMATION FROM ABROAD.

EFFECT OF THE GUN FIRE

OF THE

UNITED STATES VESSELS

IN THE

BATTLE OF MANILA BAY
(MAY 1, 1898).

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INTRODUCTORY.

This report on the Effect of the Gun Fire of the United States Vessels in the Battle of Manila Bay, by the Intelligence Officer of the U. S. S. *Baltimore*, has lately been received. In transmitting it Admiral Dewey calls attention to the value of the information contained.

The conclusions drawn by Lieutenant Ellicott at the end of his report are particularly interesting.

RICHARDSON CLOVER,
Commander, U. S. N., Chief Intelligence Officer.

NAVY DEPARTMENT, March 27, 1899.

Approved:

A. S. CROWNINSHIELD,
Rear-Admiral, U. S. N., Chief of Bureau of Navigation.



EFFECT OF GUN FIRE, BATTLE OF MANILA BAY,

May 1, 1898.

U. S. S. BALTIMORE,
Manila, P. I., January 1, 1899.

SIR: I have the honor to submit the following report on the effects of the gun fire of the United States fleet upon the Spanish war vessels in the battle of May 1, 1898, and respectfully request that it be forwarded to the Office of Naval Intelligence. The report is based upon a personal examination of all the vessels, personal conversations with officers who served on them in the action, and extracts from Admiral Montojo's official report.

REINA CRISTINA.

This vessel was flagship of Admiral Montojo during the greater part of the first engagement. She received a large concentration of gun fire and was placed hors de combat by conflagrations fore and aft, the destruction of her personnel, the destruction of her steering gear, and the bursting of a shell in her super-heater. She was then sunk by the Spaniards and abandoned in shoal water under the north wall of Cavite heading eastward, where she burned, with bulwarks awash. During the conflagration there were frequent heavy explosions. The injuries visible above water afterwards were as follows:

One large shell across bulwarks at break of forecastle, cutting away starboard lower boom.

One large shell swept bridge, apparently from starboard to port, and destroyed starboard search light. This may have been the shell described by Admiral Montojo as destroying the steam steerer.

In the forward smokestack the following shells: One 8-inch low, one 8-inch high, one 6-pounder low, one 6-pounder high; and in forward escape pipe one 5-inch and one 6-pounder midway.

In ventilator forward of after smokestack, one 6-pounder waist high and one 6-pounder midway.

The after smokestack fell 60 degrees to port, probably caused by the large shell mentioned by Admiral Montojo as exploding in the super-heater. This stack was struck, apparently while still upright, by one 8-inch shell low, two 6-pounders near the top, and one 5-inch midway.

Underneath topgallant forecastle one 8-inch shell entered near the deck and close under break of forecastle, going from port to starboard

and forward at an angle of 45 degrees, and burst under the forecastle, a large fragment passing out on starboard side.

Two 5-inch shell also penetrated under the forecastle on port side well forward, 6 feet above deck, and burst.

One 5-inch entered on starboard side in same locality and passed out on port side without exploding.

The mizzenuast, although much burned, showed evidences of having been pierced six times, and the fore and main masts once, by shells of various calibers.

The starboard after launch's davit was shot away, as if by a large shell.

An 8-inch shell pierced the shield of the port forward 16-centimeter gun, above and to left of the breech, and exploded, slipping the elevating arc band just its width to the rear and wrecking the elevating wheel, rod, and pinion on left side of gun. A fragment of this shell wrecked the elevating gear on the right side of the opposite gun. The portion of the shield penetrated sloped at an angle of about 30 degrees with the axis of the shell. The bursting of the shell about 2 feet in rear of its point of impact was coordinated by a huge hole torn upward in a sheet-iron bulwark rail arched over the sponson embrasure.

Admiral Montojo reports additional injuries as follows:

A shell burst on the forecastle, disabling all the crews of the four rapid-fire guns and driving splinters from the foremast which wounded the helmsman, who was steering on the bridge.

A shell burst on the orlop deck, setting fire to the lockers of the crew, who fortunately succeeded in putting out the fire.

The enemy * * * covered us with a hail of rapid-fire projectiles.

About half past 7 a shell completely destroyed the steam steerer.

Another shell exploded aft, putting nine men out of action.

* * * Another carried away the mizzen truck and gaff, bringing down the ensign and my flag, which were immediately replaced.

Another shell burst in the wardroom * * * and destroyed the wounded who were there under treatment.

Another burst in the after ammunition room, filled the compartments with smoke, and prevented the coupling of the handwheel. It being impossible to keep down the fire, this ammunition room had to be flooded when the cartridges were beginning to explode.

Amidships * * * a large shell had penetrated the super-heater, putting out of action a gunner's mate and twelve men who were serving the guns.

Another disabled the starboard bow gun.

* * * The fire forward was renewed by a shell which penetrated the side and burst on the orlop.

When many men had already been saved * * * a shell killed her heroic captain * * * who was directing the rescue of the crew.

Summing up, it is in evidence or officially recorded that the *Cristina* was struck by five 8-inch, five 5-inch, and thirteen other large shell, and by seven 6-pounder and nine other projectiles, or thirty-nine projectiles in all. These are not all, as Admiral Montojo reports having been covered by a hail of rapid-fire projectiles, and in conversation has estimated that the *Cristina* was hit about seventy times.

CASTILLA.

This vessel had developed such weakness in steaming to Subig Bay some days before the battle that she was not under way on the 1st of May, but in the beginning of the engagement was moored head and stern in the line of battle, her port broadside bearing. A string of iron lighters loaded with sand was moored in prolongation of Sangley Point to protect her water line. During the engagement her bower chain was cut by a shell and from the impact of another shell she swung around till her starboard broadside was presented. Being a wooden vessel she was readily and repeatedly set on fire. About 10 o'clock, while the United States squadron was drawn off, her flag came down, either by design or accident, and she burst into flames fore and aft. She then sank until her main deck was awash, and her bulwarks and upperworks were completely consumed by flames. Her forward smokestack fell 60 degrees toward the starboard quarter, probably weakened, like the *Cristina's*, by the explosion of a large shell. Next to the *Cristina* she received the greatest injury from gun fire. Injuries visible to inspection are as follows:

One 5-inch shell dismounted 37-millimeter gun on port forward bridge over sponson.

One 6-inch cut fore and aft beam over port forward gun sponson.

Seven small shell passed through forward smokestack.

Five small shell passed through forward drum room.

A large shell tore a 4-foot hole in the port side below the main deck and just abaft the port midship gun.

There is a similar injury on the starboard side, nearly opposite.

One 5-inch shell through the after smokestack.

Three 5-inch shell, close together, entered port side under main deck, abaft after smokestack.

One 6-pounder in after smokestack.

One 6-pounder in after escape pipe.

Two 5-inch entered port side between mainmast and after sponson.

One 5-inch passed through shield of 37-millimeter gun on port after bridge, over sponson, dismounting gun.

One 6-pounder cut forward part of upper edge of port after gun-sponson embrasure.

One 1-pounder cut forward vertical edge of same.

One 5-inch raked outside of starboard after sponson.

One 6-inch entered starboard side, under main deck, under midship gun.

There are two jagged holes, 4 feet and 1 foot in diameter, on starboard side under main deck, abreast after smokestack.

One 5-inch on starboard side under main deck, just abaft forward sponson.

One 5-inch through after side of forward starboard sponson.

One 5 inch through port after sponson, forward side, near deck.

Two scars of small shells on port after 16-centimeter gun shield.

Several small holes in after smokestack as if from fragments of a bursting shell.

Total, two 6-inch, twelve 5-inch, and four other large shell; three 6-pounders and sixteen other small shell; thirty-seven shell in all. Survivors tell of three 8-inch shell which burst on the orlop deck forward, amidships, and aft, causing fires which could not be controlled. This raises the known hits to forty.

Admiral Montojo states:

The *Castilla* * * * had all her guns put out of action except one on the poop. * * * Riddled by shot and in flames from the enemy's shells, she was sunk and abandoned by her crew.

Survivors state that they were rescued by boats from shore which came off in obedience to a prearranged signal.

DON ANTONIO DE ULLOA.

This vessel was not in repair on May 1, parts of her machinery being on shore. She was moored head and stern on the left of the Spanish line, in Canacao Bay, just behind Sangley Point, her starboard broadside bearing, the port guns having been removed to be emplaced on shore. The low sandy point was expected to form some protection to her hull. She was only manned by men enough to fight her starboard battery, about half of her normal complement. She received but little gun fire in the first engagement, but was riddled and sunk by the leading American ships in the second, and was abandoned with colors flying. She listed heavily to starboard just before settling, but righted on the bottom and lay with her poop awash, superstructure and fore-castle above water. She had sent down yards and topmasts and these spars were on shore, except the fore yard, which had been untrussed but not sent down. The slings of this yard were cut during action and the yard fell across the fore-castle on the sheet bits, breaking the beam at the break of the fore-castle. The other injuries visible above water are as follows:

One 6-pounder entered under fore-castle from forward, passed through the midship waist ventilator and burst in front of pilot house, near deck.

One 8 inch raking shell entered at break of topgallant fore-castle just under the deck and burst.

One 8-inch burst just under the superstructure deck, port side, on line with after end of pilot house, a long half fragment passing out through the skin of the ship.

One 5-inch came over starboard rail a little farther aft and passed out through port bulwarks.

Six 6-pounders came over same way between superstructure and poop, and passed out through hammock nettings on port side.

One 8-inch passed clean through both sides, starboard to port, just under after break of superstructure deck and near mainmast.

One 6-inch came in starboard rail abaft mainmast and passed out through port hammock netting.

Seven large shells, probably 5-inch, ripped across superstructure deck, coming from direction of starboard bow.

One 8-inch across forecastle from starboard to port dismantled starboard 6-pounder gun, cutting away the mount.

One 6-inch shell passed through the shield of this gun.

Three 6-pounders from starboard to port passed through mount of port 6-pounder gun.

One small raking shell gouged skin of ship just forward of port sponson.

One large shell ripped poop in front of mizzenmast.

One large shell cut starboard binnacle stand.

Three large shells ripped poop deck, coming from direction of starboard bow.

Two large shells burst under poop, one near break and one aft, foreing up the deck.

The left side of after 4.7-inch gun shield and the sponson rail were cut through by a 6-inch shell.

Total hits observable: Four 8-inch, three 6-inch, one 5-inch, and fourteen other large shells; ten 6-pounder and one other small shell; thirty-three projectiles in all.

Admiral Montojo states:

The *Ulloa* * * * was sunk by the holes made along her water line by the enemy's projectiles.

DON JUAN DE AUSTRIA.

This vessel was sunk by the Spaniards behind Cavite Arsenal, in Bacoor Bay, about two cables off shore abreast the west arsenal gate, after retiring from battle at the end of the first engagement. She was anchored by the port anchor and sank heading east, her topgallant forecastle above water and poop awash. After being abandoned, and while sinking, she was set on fire by a party from the *Petrel* sent for that purpose, and burned from the after engine-room bulkhead to the stern. Her starboard guns remained trained on the bow, and port ones on the beam.

Twelve empty 6-pounder cartridge shells lay at starboard forecastle gun and nine at the port one. A full box of 1-pounder ammunition remained on starboard side of superstructure near the pilot house.

The injuries to this vessel were as follows:

Two 6-pounders, or smaller, scarred foremast.

One 6-pounder and one 5-inch entered port side under topgallant forecastle and burst without causing fire.

One 6-inch or 8-inch passed through superstructure deck under the

bridge on port side and burst in the captain's galley, causing no fire, there being no woodwork in its neighborhood.

Another similar shell coming from same direction (one and one-half points abaft the beam) struck the superstructure deck near the corner of the pilot house, glanced up and demolished the steering wheel and gear and engine telegraphs.

Two 6-pounders passed through the pilot house, one from port to starboard low, and one from starboard to port halfway up.

One 5-inch cut through the mizzenmast about halfway up.

One 5-inch entered under port hawse pipe and burst, damaging port torpedo tube.

One 6-pounder entered at waterway under superstructure on main deck, port side.

One 5-inch entered port hammock netting abreast the mainmast.

One 6-pounder struck the rail abaft the port after 4 7-inch gun.

No further injuries were found after the vessel was raised. Summing up, she was hit by the following shells: Two 6-inch or 8-inch, four 5-inch, five 6-pounders, and to other small shells; thirteen projectiles in all.

The *Austria* has two bow torpedo tubes. When raised a 14.2-inch Schwartzkopff torpedo was in the upper starboard outboard rack abreast the tube, and another lay on the deck in rear of the starboard tube without a head.

The *Austria* assisted in rescuing the men from the *Castilla* before retiring behind the arsenal.

ISLA DE LUZON.

This vessel and the *Isla de Cuba* maneuvered together on the Spanish right flank, more retired than the other vessels, circling together at considerable speed. The *Luzon* retired behind the arsenal at the end of the first engagement, anchoring near the *Austria*, and was sunk by her own crew. Her stern settled upon a submerged wreck, keeping the cabin above water and the topgallant forecastle awash. After sinking her head lay northeast, she being about a cable's length southwest of the *Austria*. She was set on fire and burned by the same party which burned the *Austria*, the damage by fire being almost identical.

One 4.7-inch common shell, nose fused, remained in a rack between the after guns.

The injuries by gun fire were as follows:

One large shell crossed her rail in wake of the two forward guns, disabling both guns.

One shell cut the chain topping lift of the fore gaff, letting the peak fall across the bridge.

The *Luzon* assisted the *Cuba* in rescuing men from the *Reina Cristina* before retiring behind the arsenal.

Admiral Montojo states that—

The *Luzon* had three guns dismounted and some small injuries to her hull.

There seem, therefore, to have been three hits in all. No additional injuries could be discovered when this vessel was raised.

ISLA DE CUBA.

Admiral Montojo transferred his flag to this vessel when the *Cristina* was abandoned. After rescuing a part of the latter's crew she stood in behind the arsenal and was anchored by the starboard anchor a cable's length southwest of the *Luzon*, heading southeast. She was sunk by the Spaniards and burned by the *Petrel's* party in the same manner as the *Austria* and *Luzon*. Her main-battery guns remained trained on the bow. This vessel used armor-piercing shells from her after 4.7-inch guns, and these being the only guns of that caliber firing armor-piercing shells in the engagement, it must have been one of these which struck the *Baltimore*.

The injuries to the *Cuba* were as follows:

One 6-pounder through the pilot house, starboard to port.

One shell cut away both forward vangs abreast the pilot-house rail.

One 6-pounder passed through under the topgallant forecastle without exploding.

One 6-pounder glanced from left side of starboard after 4.7-inch gun shield.

One 6-pounder struck coming tower shoulder high, but did not penetrate.

Total hits, four 6-pounders and one unknown caliber; five in all.

The *Cuba* showed no additional injuries when raised.

MARQUES DEL DUERO.

The *Duero* was in action in the left wing of the Spanish line and under steam. She assisted in rescuing the survivors of the *Cristina* and retired like the others behind the arsenal, where she was anchored close to the shore, about 800 yards west of the *Cuba*, heading east, and was there scuttled and abandoned. A party from the *Petrel* burned her. She was entirely gutted by fire and lies with bulwarks awash. She shows the following injuries from gun fire:

One 8-inch shell entered close under topgallant forecastle deck, starboard side, and probably exploded.

One 6-inch very close to the latter, probably exploded; there being no evidences of egress by either of these shells.

One 6-pounder passed through midship-gun sponson, starboard side, forward of gun shield.

One 6-pounder passed through after bulwarks, starboard side, down through deck and out port side near break of poop.

Admiral Montojo reports:

The *Duero* had one engine crippled, as well as her 12-centimeter bow gun and one of her sponsons.

Thus there seem to have been five hits in all.

VELASCO.

This vessel was undergoing extensive repairs and lay at moorings near the east water front of Cavite arsenal. Her main deck in wake of the boilers had been removed to take out the latter, which were on shore. A new superstructure deck had been laid, but was unfinished. She had no steering gear in place. She took no part in the action. All her guns had been removed to be mounted in shore batteries. She was sunk by the Spaniards after the first engagement and then burned by a party from the *Petrel*. She lies on an even keel, heading westward, with bulwarks awash, and was not seriously injured by fire. There are evidences of the explosion of a quantity of small-arm ammunition on her deck aft, probably when she was burned. She was struck by one stray shell, which crossed her stern from port to starboard, carrying away the taffrail and kedge-anchor fluke on starboard quarter.

GENERAL LEZO.

Admiral Montojo states that this vessel was under repair and not in action. After the second engagement she was found anchored in Bacoar Bay by the port anchor about 2 cables south of the *Luzon*, heading south and settling. She was burned by a party from the *Petrel*, her after magazine exploding with great violence, as well as some ammunition on deck. Her midship guns were missing and, although she had a bow torpedo tube, there were no evidences of torpedoes on board. The elevating gear of her 9-centimeter bow gun had been damaged by a projectile. She lies with main deck about 2 feet under water.

ARGOS.

The *Argos* was a hydrographic survey vessel lightly armed and not in the fight. She remained anchored behind the arsenal about 800 yards west of the *Velaseo*, and was scuttled by the Spaniards and burned by a party from the *Petrel*. She settled till her bulwarks were awash, heading east. One large shell struck her starboard bulwarks at break of forecastle, passing outward.

Summary of hits in evidence or officially reported.

Name of vessel.	Number of hits.	Remarks.
Reina Cristina	39	Probably not more than half.
Castilla	40	Do.
Don Antonio de Ulloa	33	Do.
Don Juan de Austria	13	Complete record.
Isla de Cuba	5	Do.
Isla de Luzon	3	Do.
Marques del Duero	5	Probably more.
Velasco	1	Probably all.
General Lezo	1	Do.
Argos	1	Do.
Total	141	

Of these, thirteen were 8-inch, six 6-inch, and twenty-two others 5-inch or larger; thirty-one were 6-pounders and twenty-nine others smaller calibers.

The Spanish ships had removed all light spars, slung gaffs, and snaked rigging, but they went into action without unshipping awning stanchions, ridge ropes, or canopy frames, and they carried many of their boats. They were all painted gray except the *Castilla*. She was still white except her gun sponsons, which were gray, and her smoke-stacks yellow.

The killed and wounded, as nearly as I have been able to ascertain by painstaking inquiry, were as follows:

Vessel.	Killed.	Wounded.	Total.
Reina Cristina	130	90	220
Castilla	23	80	103
Isla de Cuba		2	2
Isla de Luzon		6	6
Don Juan de Austria		22	22
Don Antonio de Ulloa	8	10	18
Marques del Duero	0	0	0
Shore batteries	6	4	10
Total	167	214	381

Officers killed and included in the above: *Reina Christina*, captain and six others; *Castilla*, one; *Don Antonio de Ulloa*, captain and two others.

The total casualties agree with Admiral Montojo's official report.

The following points in connection with my examination seem to be brought out or emphasized:

1. The sides of iron and steel built cruisers do not arrest projectiles enough to explode them.
2. The incendiary effect of bursting 8-inch shells is great, and far greater than would seem proportionate to that of lower calibers.
3. At ranges over 2,500 yards the gun shields of cruisers are in no sense a protection, but insure the annihilation of the gun's crew and the disabling of the gun if struck by a large projectile.
4. War ships of the present day will generally be placed hors de combat by conflagration and the destruction of their personnel before they are sunk by gun fire.

Very respectfully,

JOHN M. ELLICOTT,
Lieutenant, United States Navy, Intelligence Officer.

To the COMMANDING OFFICER, U. S. S. BALTIMORE.



